WHAT IS CLAIMED IS:

1. A method for calculating a cost of a mobile node (MN) in an Internet Protocol (IP) network capable of communicating with the MN having a mobile IP and including a plurality of access routers, the method comprising the steps of:

if the MN moves to a new access router, generating by the MN a distance measurement request message including an initial hop limit field value and a hop limit value and transmitting to an access router serving as a regional anchor point (RAP) of the MN the generated distance measurement request message; and

upon receiving the distance measurement request message, calculating, by the access router serving as the RAP, a hop count using the initial hop limit field value and the hop limit value, and sending to the MN as an acknowledgement signal the calculated hop count.

2. The method of claim 1, further comprising the step of decreasing the hop limit value included in the distance measurement request message by each of the plurality of access routers constituting the IP network each time each of the plurality of access routers receives the distance measurement request message and then delivers to a next node the distance measurement request message.

3. The method of claim 1, further comprising the step of generating by the MN a binding update message and sending to a correspondent node and a home agent the generated binding update message , if it is determined from the hop count that a distance between the new access router and the RAP exceeds a distance limitation.

4. The method of claim 3, wherein the MN maintains a previous RAP if the hop count does not exceed a distance limitation.

5. The method of claim 1, wherein the hop count is calculated using a difference between the initial hop limit field value and the hop limit value.

6. The method of claim 1, wherein if the MN moves to the new access router, the

MN sends the distance measurement request message to the access router serving as the RAP of the MN.

7. A method for calculating a cost of a mobile node (MN) in an Internet Protocol (IP) network capable of communicating with the MN having a mobile IP and including a plurality of access routers, the method comprising the steps of:

if the MN moves to a new access router generating by the MN a distance measurement request message and transmitting to an access router serving as a regional anchor point (RAP) of the MN the generated distance measurement request message ;

upon receiving the distance measurement request message, generating, by the access router serving as the RAP, an acknowledgement message having an initial hop limit field value and a hop limit value, and transmitting the acknowledgement message; and

calculating by the MN a hop count using the initial hop limit field value and the hop limit value.

8. The method of claim 7, further comprising the step of decreasing the hop limit value by each of the plurality of access routers in the IP network each time each of the plurality of access routers sends the acknowledgement message to a next node.

9. The method of claim 7, further comprising the step of generating by the MN a binding update message and delivering to a correspondent node and a home agent the generated binding update message, if a distance between an access router in which the MN is located and the access router serving as the RAP of the MN exceeds a distance limitation.

10. The method of claim 7, wherein the hop count is calculated using a difference between the initial hop limit field value and the hop limit value.

11. The method of claim 7, wherein if the MN moves to the new access router, the MN sends the distance measurement request message to the access router serving as the RAP of the MN.

12. The method of claim 7, wherein the MN maintains a previous RAP if the hop count does not exceed a distance limitation.

13. A method for calculating a cost of a mobile node (MN) in an Internet Protocol (IP) network capable of communicating with the MN having a mobile IP and including a plurality of access routers, the method comprising the steps of:

if the MN moves to a new access router, generating by the MN a distance measurement request message including an initial hop limit field value and a hop limit value and transmitting to an access router serving as a regional anchor point (RAP) of the MN the generated distance measurement request message,;

upon receiving the distance measurement request message, calculating, by the access router serving as the RAP, a hop count using the initial hop limit field value and the hop limit value, and delivering to the MN the calculated hop count as an acknowledgement signal;

upon receiving the distance measurement request message, generating, by the access router serving as the RAP, a distance measurement message including an initial hop limit field value and a hop limit value, and transmitting the generated distance measurement message; and

calculating by the MN a hop count using the initial hop limit field value and the hop limit value, and receiving a measured hop count from the access router serving as the RAP.

14. The method of claim 13, further comprising the step of decreasing the hop count by each of the plurality of access routers in the IP network each time each of the plurality of access routers delivers the distance measurement request message to a next node.

15. The method of claim 13, further comprising the step of decreasing the hop count by each of the plurality of access routers in the IP network each time each of the plurality of access routers delivers the distance measurement message to a next node.

16. The method of claim 13, further comprising the step of generating by the MN a binding update message and sending to a correspondent node and a home agent the generated binding update message, if a distance between an access router in which the MN is located and the access router serving as the RAP of the MN exceeds the hop limit value.

17. The method of claim 13, wherein if the MN moves to the new access router, the MN sends the distance measurement request message to the access router serving as the RAP of the MN.

18. The method of claim 13, wherein the MN maintains a previous RAP if the hop count does not exceed a distance limitation.

19. The method of claim 13, wherein the hop count is calculated using a difference between the initial hop limit field value and the hop limit value by the MN and the access router serving as the RAP of the MN.

20. A method for calculating a cost by a mobile node (MN) in an Internet Protocol (IP) network capable of communicating with the MN having a mobile IP and including a plurality of access routers, the method comprising the steps of:

if the MN moves to a new access router, generating a distance measurement request message including an initial hop limit field value and a hop limit value and transmitting the generated distance measurement request message to a regional anchor point (RAP) of the MN; and receiving an acknowledgement message including a distance value from the RAP in response to the distance measurement request message.

21. The method of claim 20, further comprising the step of if the distance value exceeds a predetermined distance limitation, generating a binding update signal and sending the binding update signal to a correspondent node and a home agent.

22. A method for calculating a cost by a mobile node (MN) in an Internet Protocol (IP) network capable of communicating with the MN having a mobile IP and including a plurality of access routers, the method comprising the steps of:

generating a distance measurement request message and transmitting the generated distance measurement request message to a regional anchor point (RAP); and

upon receiving an acknowledgement message including an initial hop limit field value

and a hop limit value from the RAP, calculating a hop count using the initial hop limit field value and the hop limit value.

23. The method of claim 22, further comprising the step of if the hop count exceeds a predetermined distance limitation, generating a binding update signal and sending the binding update signal to a correspondent node and a home agent.

24. A method for calculating a cost by a regional anchor point (RAP) in an Internet Protocol (IP) network capable of communicating with a mobile node (MN) having a mobile IP and including a plurality of access routers, the method comprising the steps of:

receiving from the MN a distance measurement request message including an initial hop limit field value and a hop limit value;

calculating a hop count using the initial hop limit field value and the hop limit value included in the received distance measurement request message; and

transmitting an acknowledgement message including the calculated hop count to the MN.

25. A method for calculating a cost by a regional anchor point (RAP) in an Internet Protocol (IP) network capable of communicating with a mobile node (MN) having a mobile IP and including a plurality of access routers, the method comprising the steps of:

receiving a distance measurement request message from the MN; and

generating an acknowledgement message including an initial hop limit field value and a hop limit value and transmitting the generated acknowledgement message.

26. A method for calculating a cost by a regional anchor point (RAP) in an Internet Protocol (IP) network capable of communicating with a mobile node (MN) having a mobile IP and including a plurality of access routers, the method comprising the steps of:

receiving from the MN a distance measurement request message including an initial hop limit field value and a hop limit value;

calculating a first hop count using the initial hop limit field value and the hop limit value included in the received distance measurement request message; and

transmitting to the MN an acknowledgement message including the calculated first hop count, a second initial hop limit field value, and a hop limit value.